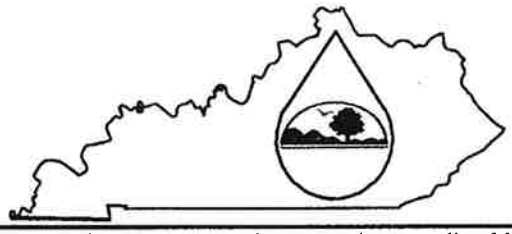
AI # 104772

KPDES FORM HQAA



Kentucky Pollutant Discharge Elimination System (KPDES)

High Quality Water Alternative Analysis

The Antidegradation Implementation Procedures outlined in 401 KAR 5:030, Section 1(3)(b)5 allows an applicant who does not accept the effluent limitations required by subparagraphs 2 and 3 of 5:030, Section 1(2)(b) to demonstrate to the satisfaction of the Environmental and Public Protection Cabinet that no technologically or economically feasible alternatives exist and that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water is located. The approval of a POTW's regional facility plan pursuant to 401 KRS 5:006 shall demonstrate compliance with the alternatives analysis and socioeconomic demonstration for a regional facility. This demonstration shall also include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Permit Information

Facility Name:	Leeco DNR Permit 867-0486 AM#1	**KPDES NO.:**	KYG045876
Address:	1374 Highway 192 East	**County:**	Letcher
City, State, Zip Code:	London, KY 40741	**Receiving Water Name:**	Bull Cr., Upper Lick Fork

II. Alternatives Analysis

	Yes	No
1. Has discharge to other treatment works been investigated? (If yes, then indicate which treatment works were considered and the reasons why that discharge to these works is not feasible.)	☒	☐

See attachment

	Yes	No
2. Have other discharge locations been evaluated? (If yes, then indicate what other discharge locations have been evaluated and the reasons why these locations are not feasible.)	☒	☐

See attachment

II. Alternatives Analysis - continued

	Yes	No
3. Has water reuse or recycle been investigated as an alterative to discharge? (If yes, then provide the reasons why it is not a feasible alternative	☒	☐

See attachment

	Yes	No
4. Have alternative process or treatment options been evaluated? (If yes, then indicate what process or treatment options have been evaluated and provide the reasons they were not feasible.)	☒	☐

See attachment

II. Alternatives Analysis - continued

	Yes	No
5. Have on-site or subsurface disposal options been evaluated? (If yes, then indicate the reasons they were not feasible.)	☒	☐

See attachment

	Yes	No
. Have any other alternatives to lowering water quality been evaluated? (If yes, then describe those alternatives evaluated and provide the reasons why these alternatives were not feasible.)	☒	☐

See attachment

III. Socioeconomic Demonstration

State the positive and beneficial effects of this facility on the existing environment or a public health problem.

See attachment

2. Describe this facility's effect on the employment of the area

See attachment

3. Describe how this facility will increase or avoid the decrease of area employment.

See attachment

4. Describe the industrial or commercial benefits to the community, including the creation of jobs, the raising of additional revenues, the creation of new or additional tax bases.

See attachment

5. Describe any other economic or social benefits to the community.

See attachment

III. Socioeconomic Demonstration - continued

	Yes	No
6. Will this project be likely to change medium household income in the county?	☒	☐
7. Will this project likely change the market value of taxable property in the county?	☐	☒
8. Will this project increase or decrease revenues in the county?	☒	☐
9. Will any public buildings be affected by this system?	☐	☒

10. How many households will be impacted by this project? **100**

11. How will those households be impacted?

	Yes	No
12. Does this project replace any other methods of sewage treatment to existing facilities? (if so describe how)	☐	☒

	Yes	No
13. Does this project treat any existing sources of pollution more effectively? (If so describe how.)	☒	☐

See attachment

III. Socioeconomic Demonstration - continued

	Yes	No
14. Does this project eliminate any other sources of discharge or pollutants? (If so describe how.)	☒	☐

See attachment

15. How will the increase in production levels positively affect the socioeconomic condition of the area?

See attachment

16. How will the increase in operational efficiency positively affect the socioeconomic condition of the area?

See attachment

IV Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title:	Bill Johnson, VP-Engineering	**Telephone No.:**	606-878-7411
Signature:	E-Signed by Bill Johnson VERIFY authenticity with Approvelt	**Date:**	05/26/2009

II. Alternatives Analysis

1. Has discharge to other treatment works been investigated?

There are treatment facilities for other surface mines in the area but are located in watersheds that would not intercept runoff from the proposed mine. There are no municipal or other treatment facilities within 8 miles of the proposed mine. The nearest downstream municipal system is located at Hazard, KY about 15 miles from the permit area.
To capture the runoff and divert the water through pipes to the Hazard Municipal treatment systems would require the laying of pipe for almost 10 miles. The cost to lay pipe of sufficient size and at sufficient depth and to cross the streams and roads to get to Hazard would average $20/foot and would cost $20(10)5280 = $1,056,000. This cost would offset the net income expected from this mining.

To intercept the runoff from the proposed mining area and get it to other surface mine treatment facilities in the area would require either capturing the runoff and pumping it into a truck to be hauled to the treatment facility or capturing the runoff and pumping it into waterlines to carry the runoff to the treatment facilities at other surface mines. The average runoff over a year for an acre of forested land in Letcher Co. is 36/12(.73) = 2.19 acre/feet.

36" average rainfall
73% average runoff

There are 325,851 gallons of water in an acre/foot. The discharge points associated with this surface mine captures 317 acres. The ponds will be treating 317(2.19)(325,851) = 226,215,539 gallons of water per year. According to clarkpublicutilities.com it costs 2.2 cents per day to pump water or 365(2.2) =$8.03/year. It would cost the applicant 226,215,539($8.03) = $1,816,510/year to pump the runoff from this permit area. The cost to pump the runoff from this mine to other facilities would far exceed the income expected from the mining of the coal. The topography of this area would limit the ability to pump water to other treatment facilities. The topography of this area is very steep with the landscape dissected by many valleys and ridges, which would have to be crossed before treatment at other mines would be reached. The difference in elevation between the valley floor and ridgelines is on average 250 feet. To cross these valleys and ridges with water lines lift stations would have to be installed, which would add to the cost of pumping the water.

2. Have other discharge locations been evaluated?

The nearest alternative to the proposed discharge points in Bull Creek and Upper Lick Fork are other high quality streams that are separated from these watersheds by steep ridges. The top of the ridge is 200 feet above from the valley floor. In order to capture the runoff from Bull Cr. and Upper Lick Fork and pump it to another watershed would require constructing a detention facility that would cost at least $100,000 to be of

sufficient size to hold the expected runoff before it could be pumped. Waterlines and lift stations would be required to transport the water from these streams and into another watershed that are also high quality water. The expected daily flow from these streams is approximately 750,000 gallons. To construct the water lines and lift stations to pump the water to another watershed would cost $20 per foot (20)(2200) = $44,000. To pump the 750,000 gallons at .02 cents a gallon would be $15000 a day. A treatment facility in another watershed would also be required at an expected cost of $10,000. The total cost over the first year would be approximately $5.5 million. The cost to pump water from these streams to another watershed would be greater than the profit margin expected from the mining of the coal so this alternative was eliminated.

3. Has water reuse or recycle been investigated as an alternative to discharge?

In order to reuse or recycle the water, the only viable option is to use it to spray over the backfill to promote vegetative growth or dust suppression. Rainfall in Letcher County averages 36 inches per year or nearly 1.0 inch per week. With this amount of rainfall, supplemental watering is hardly needed and dust in the air is not considered to be problem in Letcher Co. The cost to pump the water to spray onto the backfill which would be above the ponds would be $1,816,000 per year (See item 1). The cost of this alternative would far exceed the value of the coal to be mined by this application.
Water does play a key part in mining operations as far as misting/spraying the area to help alleviate airborne coal dust. However, the amount of water required for dust suppression is minimal compared to the discharge generated. Water used for dust suppression in a day on a large surface mine would be less than 12,000 gallons, compared to the estimated 1.2 million leaving the site each day. Dust suppression is generally only required during dry times when the flow of the surface discharge is low or non-existent. A small portion (approximately 400,000 gallons) of the total discharge generated (approximately 2.3 billion gallons) will be used for hydro-seeding when grade work is completed on this project. This will require approximately $99,000, and 132 loads. (3000 gallons per load) However, the amount of water needed for hydro-seeding is miniscule in comparison to the total discharge generated.

4. Have alternative process or treatment options been evaluated?

The proposed surface mining is considered the only option safe and feasible process for the mining. The areas proposed for mining are too close to the outcrop to safely allow processing by underground mining. To safely mine coal by underground methods there should be 100 feet of overburden above the coal, otherwise it is extremely difficult to prevent roof falls.

Two solutions present themselves for the treatment/removal of sediment from surface water;

1. Filtration, and
2. Settlement

Filtration would still require getting the water to a central location and holding it until it could be passed through a filtering system. That system would be costly to construct and maintain. Sediment removed from the water would have to be hauled to some location for disposal, requiring dedicated equipment and the associated maintenance and operating costs. Rainfall during the period that vegetative growth was being established on the disposed sediment would carry part of the sediment back to the filtration system, thus creating a loop of rehandling material. The topography of the area is very steep with narrow valleys and steep sideslopes. This topography would require a very large amount of material to be excavated and regraded to construct a filtration facility. The cost to construct such a facility would be at least $400,000. Such a treatment facility would also be of no use or value in this remotely populated area of Letcher. For these reasons, this option was eliminated from consideration.

5. Have on-site or subsurface disposal options been evaluated?

Subsurface disposal would entail allowing the water to run into underground mines in the area or drilling holes from the surface to underground mine voids. There are no underground mine voids within 0.5 miles of the proposed operation. To capture the runoff expected from this would require constructing a detention facility. The facility would have to hold at least the runoff from three days which is expected to be about once acre/foot. To capture the runoff from Bull Cr. and Upper Lick Fork would require the construction of a facility at a cost of approximately $250,000. To then pump the water 0.5 miles to the underground mine would cost at least $20 a foot or $52,800. To pump water it costs .022 cents per gallon per day or 365(.022)=$8.03/year. To pump the 276,000,000 gallons($8.03)=$1,800,000 per year. This would exceed the amount of profit expected by mining the coal so this option was eliminated.

The amount of runoff expected from this operation is 276,000,0000 gallons of water a year. To capture this runoff and dispose into the subsurface would require building ponds to capture the runoff and drilling wells. If you have to build ponds to capture the water, there is no point in then pumping the water into wells. To pump the water after being captured in the ponds would cost $315,000,000. The cost of ponds to capture the runoff would cost at least $50,000. The subsurface in this area is shale, sandstone, clay and coal that has a high cohesion and a small pore space. The available pore space to accommodate the runoff from this site is insufficient to inject the runoff into wells, so this option was eliminated from consideration.

On-site disposal entails the information given in question 4 regarding settlement. This is the method chosen for this project.

6. Have any other alternatives to lowering water quality been evaluated?

The discharge to other surface mine treatment facility in the area was considered.
To intercept the runoff from the proposed mining area and get it to other surface mine treatment facilities in the area would require either capturing the runoff and pumping it into a truck to be hauled to the treatment facility or capturing the runoff and pumping it

into waterlines to carry the runoff to the treatment facilities at other surface mines. The average runoff over a year for an acre of forested land in Letcher Co. is 36/12(.73) = 2.19 acre/feet.

36" average rainfall
73% average runoff

There are 325,851 gallons of water in an acre/foot. The discharge point associated with this surface mine captures 317 acres. The ponds will be treating 317(2.19)(325,851) = 226,215,539 gallons of water per year. According to clarkpublicutilities.com it costs 2.2 cents per day to pump water or 365(2.2) =$8.03/year. It would cost the applicant 226,215,539($8.03) = $1,816,512 to pump the runoff from this permit area. The cost to pump the runoff from this mine to other facilities would far exceed the income expected from the mining of the coal. The topography of this area would limit the ability to pump water to other treatment facilities. The topography of this area is very steep with the landscape dissected by many valleys and ridges, which would have to be crossed before treatment at other mines would be reached. The difference in elevation between the valley floor and ridgelines is on average 250 feet. To cross these valleys and ridges with water lines lift stations would have to be installed, which would add to the cost of pumping the water.

Methods to keep from discharging water are discussed in questions 3 and 5 and were found to not be viable options for this project. If water quality is lowered as a result of discharging from this project, the effects will be relatively short term. Reclamation is required to be maintained within a reasonable time and distance behind active operations, thus minimizing the amount of disturbed ground to produce maximum sediment. Effluent from sediment structures is required to meet minimum levels, and the ponds on this project are designed to result in levels well below the maximum limits.

The applicant could also choose not to mine the area so that lowering water quality could be avoided. The applicant has been in the mining industry for over 25 years. In order to keep the company operating coal reserves must be found and permitted. The applicant could choose to quit mining but the employees would have to be laid off and the mining equipment sold. The applicant has chosen to continue mining and thus must be trying to find coal reserves that can be economically mined. The research that the applicant has undergone to find the area now proposed to be mined is considerable. Land owners had to be contacted and exploration also had to be completed. If the applicant were to choose not to mine the area the 40 to 60 employees that the applicant has would have to be layed off. This layoff would result in $2,400,000 to $3,600,000 in lost wages and benefits. The layoffs would also be harmful to the families of the employees of the applicant. The employees would have to find new jobs or temporarily receive unemployment. Most of the employees live in Letcher county, which is one of the poorest counties in the nation, the social impact to this county would be harmful.

The applicant could accept more stringent limitations on the effluent. The cost of additional monitoring and engineering to comply with the standards would be cost

prohibitive. The ponds would have to be much larger, baffles in the pond pools would have to be installed to inject chemicals into the pond for treatment would be required. To make the ponds larger, conduct additional monitoring and conduct chemical treatment to the six ponds now proposed would add at least $10,000 per pond to the cost of the operation, which would then make the cost of the project a much less profitable mine. The more stringent limitations are considered not feasible.

III. Socioeconomic Demonstration

1. State the positive and beneficial effects of this facility on the existing environment or a public health problem.

There has been considerable logging activities and mining in the area where the mining is proposed. The mining areas, logging roads and skid trails have poorly developed vegetation and the runoff from these areas is washing sediment into the receiving streams. The proposed mining will reclaim the previous mining, logging roads and skid trails by establishing vegetation. The ponds proposed will catch the runoff from these areas allowing silt to settle. The mining should result in a positive impact to the receiving water by reclaiming the previous mining, logging roads and skid trails created by the logging operation.

2. Describe this facility's effect on the employment of the area.

This project will directly employ about 40 to 60 people. The annual payroll will be about $2.4 to 3.6 million, including benefits. The average salary including benefits will be about $60,000.
From 2000 through June of 2008, the unemployment rate in Letcher Co. has ranged from 5.9% to 6.9%. During the same time period, the unemployment rate has ranged from4.2% to 11.1% in Kentucky and has also ranged from 4% to 9.7% in the US. In 2008, there 8,176 people in the Letcher Co., workforce with 564 unemployed, yielding a 6.9% unemployment rate. Using these figures and assuming a 3:1 ratio of direct to indirect jobs created, the unemployment rates for Letcher Co. would drop to 1.4%.

3. Describe how this facility will increase or avoid the decrease of area employment.

This project will directly employ about 40 to 60 people. The annual payroll will be about $2.4 to 3.6 million, including benefits. The average salary including benefits will be about $60,000.
From 2000 through June of 2009, the unemployment rate in Letcher Co. has ranged from 5.9% to 11.9%. During the same time period, the unemployment rate has ranged from4.2% to 11.1% in Kentucky and has also ranged from 4% to 9.7% in the US. In 2008, there 8,176 people in the Letcher Co., workforce with 564 unemployed, yielding a 6.9% unemployment rate. Using these figures and assuming a 3:1 ratio of direct to indirect jobs created, the unemployment rates for Letcher Co. would drop to 1.4%.

It is estimated that for each employee of the mine three other jobs are affected in the county. The employees of the mine buy food, gas, clothing, household supplies, utilities and entertainment from other employers throughout the county and surrounding area.

4. Describe the industrial or commercial benefits to the community, including the creation of jobs, the raising of additional revenues, the creation of new or additional tax bases.

This project will directly employ about 40 to 60 people. The annual payroll will be about $2.5 to 3.6 million, including benefits. The average salary including benefits will be about $60,000. The applicant contracts trucking of the coal and engineering. The fuel for the equipment, the parts for the equipment are also provided by contractors all of which are effected indirectly affected by the mining operation. This will inject additional money into the local economy to support other business establishments. Required supplies to operate the project will inject additional money into the local economy and support other local businesses and jobs. The amount of coal to be mined on this project is expected to create $5 million in severance taxes and additional money in sales and payroll taxes. Part of the severance tax is returned to Letcher Co. which uses the money to extend water lines and sewer lines and build and improve roads in Letcher Co., which will improve the lives of the citizens.

5. Describe any other economic or social benefits to the community.

The mining will pay severance tax, part of which will be returned to Letcher County. The severance tax paid by coal companies mining in Letcher Co. in the fiscal year 2006/2007 was $18,000,000. The severance tax money will be used to improve roads, and extend water and sewer lines, which will improve the lives of the citizens of Letcher Co. The secondary economic benefits to the community include maintenance of some of poorly maintained public roads that the applicant will utilized when hauling the coal from the mine to the tipple.

10. How many households will be impacted by this project?

Total employment will be approximately 40-60. Therefore, the project will impact about 40-60 households. Approximately three times or 120 to 180 other households will be indirectly affected by the proposed mining.

11. How will those households be affected?

The primary effect to these households will be to maintain their standard of living at a level to which they have become accustomed. The $60,000 in wages and benefits that each of the 40 to 60 employees receives will be a beneficial impact. These wages will enable each employee to purchase food, clothing and housing for there families. The wages will also allow the employees to send their children to college or at least not have to borrow as much if the wages were not being paid. The benefits provided by the applicant include health insurance, which allows the employee and family to obtain

medical services when they are sick. The wages also allow the employees to contribute to charities if they choose.

13. Does this project treat any existing sources of pollution more effectively?

There are logging roads and previous mining disturbance in the project area. The disturbance from the logging roads and previous mining will drain into ponds that will be built to control runoff from the proposed mining operation. These ponds will capture silt generated from the logging roads and previous mining, eliminating a source of pollution. The logging roads will be re-vegetated after mining in the watershed eliminating these roads as sources of pollution.

14. Does this project eliminate any other sources of discharge or pollutants?

There are logging roads and previous mining disturbance in the project area. The disturbance from the logging roads and previous mining will drain into ponds that will be built to control runoff from the proposed mining operation. These ponds will capture silt generated from the logging roads and previous mining, eliminating a source of pollution. The logging roads will be re-vegetated after mining in the watershed eliminating these roads as sources of pollution.

15. How will the increase in production levels positively affect the socioeconomic condition of the area?

The tons of coal to be mined in the permit area is approximately 2,000,000. The expected life of the mining is 5 years. The 2,000,000 tons of coal mined over the 5 years should produce $20,000,000 of revenue for 5 years. Increased production levels lead to increased revenues for both public and private entities. Additional taxes will be made available to local government. The additional taxes will provide water and sewer lines and improve roads and schools locally. Additional income will be available to private citizens by the purchasing of goods and services by the applicant. This income will benefit the citizens by increasing their incomes.

16. How will the increase in operational efficiency positively affect the socioeconomic condition of the area?

The proposed surface mining proposes to store the excess overburden created by the swell associated with earth moving, to the extent possible out of waters of the United States as defined by the corps of engineers. By minimizing in-stream activity the applicant has preserved the functions and values of the receiving waters. All mining highwalls will be eliminated and the area mined will be returned to the approximate original contour to preserve view sheds of the area impacted by mining. The applicant also proposes to auger the coal. This method of mining will reduce the amount of surface disturbance necessary to recover the coal economically.